

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



Blast 2 Sequences results

PubMed

Entrez

BLAST

OMIM

Taxonomy

Structure

BLAST 2 SEQUENCES RESULTS VERSION BLASTN 2.2.5 [Nov-16-2002]

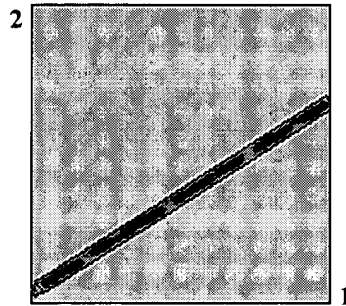
Match: Mismatch: gap open: gap extension:
 x_dropoff: expect: wordsize: Filter ☒

Sequence 1 lc|seq_1 SEQ ID NO:5

Length 2222 (1 .. 2222)

Sequence 2 gi Homo sapiens solute carrier family 40 (iron-regulated transporter), member 1 (SLC40A1),
 31543639 mRNA

Length 3460 (1 .. 3460)



NOTE: The statistics (bitscore and expect value) is calculated based on the size of nr database

NOTE: If protein translation is reversed, please repeat the search with reverse strand of the query sequence

Score = 4226 bits (2198), Expect = 0.0
 Identities = 2211/2215 (99%), Gaps = 1/2215 (0%)
 Strand = Plus / Plus

```

Query:      1      agctggctcagggcgctccgctaggtcggacgacctgctgagcctcccaaaccgcttcca 60
             |||||N||||||||||||||||||||||||||||||||||||||||||
Sbjct:     126     agctggctcagggcgctccgctaggtcggacgacctgctgagcctcccaaaccgcttcca 185

Query:      61      taaggctttgc-tttccaacttcagctacagtgttagctaagtttgaaagaaggaaaaa 119
             ||||| ||||||||||||||||||||||||||||||||||||||||
Sbjct:     186     taaggctttgcctttccaacttcagctacagtgttagctaagtttgaaagaaggaaaaa 245

Query:     120      agaaaatccctgggcccttttctttgttctttgccaaagtcgctggttagtctttt 179
             ||||| ||||||||||||||||||||||||||||||||||||||||
Sbjct:     246     agaaaatccctgggcccttttctttgttctttgccaaagtcgctggttagtctttt 305

Query:     180      gcccaaggctgttggttttttagaggtgctatctccagttccttgcactcctgttaacaa 239
             ||||| ||||||||||||||||||||||||||||||||||||||||
Sbjct:     306     gcccaaggctgttggttttttagaggtcctatctccagttccttgcactcctgttaacaa 365

Query:     240      gcacctcagcgagagcagcagcagcgatagcagccgcagaagagccagcggggtcgcta 299
             ||||| ||||||||||||||||||||||||||||||||||||||||
Sbjct:     366     gcacctcagcgagagcagcagcagcgatagcagccgcagaagagccagcggggtcgcgta 425

Query:     300      gtgtcatgaccagggcgggagatcacaaccgccagagaggatgctgtggatccttggccg 359
             ||||| ||||||||||||||||||||||||||||||||||||||||
Sbjct:     426     gtgtcatgaccagggcgggagatcacaaccgccagagaggatgctgtggatccttggccg 485
  
```

Exhibit 1

solute carrier family 40 (iron-> 1

M T R A G D H N R Q R G C C G S L A

Query: 360 actacctgacctctgcaaaattccttctctaccttgggtcattctctctctacttggggag 419
|||||
Sbjct: 486 actacctgacctctgcaaaattccttctctaccttgggtcattctctctctacttggggag 545
solute carrier family 40 (iron-> 19 D Y L T S A K F L L Y L G H S L S T W G

Query: 420 atcggatgtggcactttgcggtgtctgtgtttctggtagagctctatggaaacagcctcc 479
|||||
Sbjct: 546 atcggatgtggcactttgcggtgtctgtgtttctggtagagctctatggaaacagcctcc 605
solute carrier family 40 (iron-> 39 D R M W H F A V S V F L V E L Y G N S L

Query: 480 ttttgacagcagtctacgggctgggtggcagggctgttctggtcctgggagccatca 539
|||||
Sbjct: 606 ttttgacagcagtctacgggctgggtggcagggctgttctggtcctgggagccatca 665
solute carrier family 40 (iron-> 59 L L T A V Y G L V V A G S V L V L G A I

Query: 540 tcggtgactgggtggacaagaatgctagacttaaagtggcccagacctcgctggtggtac 599
|||||
Sbjct: 666 tcggtgactgggtggacaagaatgctagacttaaagtggcccagacctcgctggtggtac 725
solute carrier family 40 (iron-> 79 I G D W V D K N A R L K V A Q T S L V V

Query: 600 agaatgtttcagtcacctgtgtggaatcatcctgatgatggttttcttacataaacatg 659
|||||
Sbjct: 726 agaatgtttcagtcacctgtgtggaatcatcctgatgatggttttcttacataaacatg 785
solute carrier family 40 (iron-> 99 Q N V S V I L C G I I L M M V F L H K H

Query: 660 agcttctgaccatgtaccatggatgggttctcacttctgctatatacctgatcatcacta 719
|||||
Sbjct: 786 agcttctgaccatgtaccatggatgggttctcacttctgctatatacctgatcatcacta 845
solute carrier family 40 (iron-> 119 E L L T M Y H G W V L T S C Y I L I I T

Query: 720 ttgcaaatattgcaaatgtggccagtactgctactgcaatcacaaatccaaagggattgga 779
|||||
Sbjct: 846 ttgcaaatattgcaaatgtggccagtactgctactgcaatcacaaatccaaagggattgga 905
solute carrier family 40 (iron-> 139 I A N I A N L A S T A T A I T I Q R D W

Query: 780 ttgttgttgttgaggagaagacagaagcaaaactagcaaatatgaatgccacaatacgaa 839
|||||
Sbjct: 906 ttgttgttgttgaggagaagacagaagcaaaactagcaaatatgaatgccacaatacgaa 965
solute carrier family 40 (iron-> 159 I V V V A G E D R S K L A N M N A T I R

Query: 840 ggattgaccagttaaccaacatcttagccccatggctgttggccagattatgacatttg 899
|||||
Sbjct: 966 ggattgaccagttaaccaacatcttagccccatggctgttggccagattatgacatttg 1025
solute carrier family 40 (iron-> 179 R I D Q L T N I L A P M A V G Q I M T F

Query: 900 gctccccagtcacggtgtggttttatttcgggatggaacttggatatccatgtgcgtgg 959
|||||
Sbjct: 1026 gctccccagtcacggtgtggttttatttcgggatggaacttggatatccatgtgcgtgg 1085
solute carrier family 40 (iron-> 199 G S P V I G C G F I S G W N L V S M C V

Query: 960 agtacgtcctgctctggaaggtttaccagaaaacccagctctagctgtgaaagctggtc 1019
|||||
Sbjct: 1086 agtacgttctgctctggaaggtttaccagaaaacccagctctagctgtgaaagctggtc 1145
solute carrier family 40 (iron-> 219 E Y V L L W K V Y Q K T P A L A V K A G

Query: 1020 ttaaagaagaggaaactgaattgaaacagctgaatttacacaaagatactgagccaaaac 1079
|||||

Sbjct: 11 ttaaagaagaggaaactgaattgaaacagctgaaacacacaaagatactgagccaaaac 1205
solute carrier family 40 (iron- 239 L K E E E T E L K Q L N L H K D T E P K

Query: 1080 ccctggagggaactcatctaattgggtgtgaaagactctaacatccatgagcttgaacatg 1139
|||||

Sbjct: 1206 ccctggagggaactcatctaattgggtgtgaaagactctaacatccatgagcttgaacatg 1265
solute carrier family 40 (iron- 259 P L E G T H L M G V K D S N I H E L E H

Query: 1140 agcaagagcctacttgtgcctcccagatggctgagcccttccgtaccttccgagatggat 1199
|||||

Sbjct: 1266 agcaagagcctacttgtgcctcccagatggctgagcccttccgtaccttccgagatggat 1325
solute carrier family 40 (iron- 279 E Q E P T C A S Q M A E P F R T F R D G

Query: 1200 gggctctcctactacaaccagcctgtgtttctggctggcatgggtcttgccttccctttata 1259
|||||

Sbjct: 1326 gggctctcctactacaaccagcctgtgtttctggctggcatgggtcttgccttccctttata 1385
solute carrier family 40 (iron- 299 W V S Y Y N Q P V F L A G M G L A F L Y

Query: 1260 tgactgtcctgggctttgactgcatcaccacagggtagcctacactcagggactgagtg 1319
|||||

Sbjct: 1386 tgactgtcctgggctttgactgcatcaccacagggtagcctacactcagggactgagtg 1445
solute carrier family 40 (iron- 319 M T V L G F D C I T T G Y A Y T Q G L S

Query: 1320 gttccatcctcagtattttgatgggagcatcagctataactggaataatgggaactgtag 1379
|||||

Sbjct: 1446 gttccatcctcagtattttgatgggagcatcagctataactggaataatgggaactgtag 1505
solute carrier family 40 (iron- 339 G S I L S I L M G A S A I T G I M G T V

Query: 1380 cttttacttggctacgtcgaaaatgtggtttggttcggacaggtctgatctcaggattgg 1439
|||||

Sbjct: 1506 cttttacttggctacgtcgaaaatgtggtttggttcggacaggtctgatctcaggattgg 1565
solute carrier family 40 (iron- 359 A F T W L R R K C G L V R T G L I S G L

Query: 1440 cacagctttcctgtttgatcttgtgtgtgatctctgtattcatgcctggaagccccctgg 1499
|||||

Sbjct: 1566 cacagctttcctgtttgatcttgtgtgtgatctctgtattcatgcctggaagccccctgg 1625
solute carrier family 40 (iron- 379 A Q L S C L I L C V I S V F M P G S P L

Query: 1500 acttgtccggtttctccttttgaagatatccgatcaagggtcattcaaggagagtcaatta 1559
|||||

Sbjct: 1626 acttgtccggtttctccttttgaagatatccgatcaagggtcattcaaggagagtcaatta 1685
solute carrier family 40 (iron- 399 D L S V S P F E D I R S R F I Q G E S I

Query: 1560 cacctaccaagatacctgaaattacaactgaaatatacatgtctaattgggtctaattctg 1619
|||||

Sbjct: 1686 cacctaccaagatacctgaaattacaactgaaatatacatgtctaattgggtctaattctg 1745
solute carrier family 40 (iron- 419 T P T K I P E I T T E I Y M S N G S N S

Query: 1620 ctaatatgtcccgagacaagtcctgaatctgtgccataatctctgtcagctctgctgt 1679
|||||

Sbjct: 1746 ctaatatgtcccgagacaagtcctgaatctgtgccataatctctgtcagctctgctgt 1805
solute carrier family 40 (iron- 439 A N I V P E T S P E S V P I I S V S L L

Query: 1680 ttgcaggcgctcattgctgctagaatcggtctttggctcctttgatttaactgtgacacagt 1739
|||||

Sbjct: 1806 ttgcaggcgctcattgctgctagaatcggtctttggctcctttgatttaactgtgacacagt 1865
solute carrier family 40 (iron- 459 F A G V I A A R I G L W S F D L T V T Q

Query: 1740 tgctgcaagaaaatgtaattgaatctgaaagaggcattataaatggtgtacagaactcca 1799

```
|||||
Sbjct: 1866 tgctgcaagaaaatgtaattgaatctgaaagaggcattataaatggtgtacagaactcca 1925
solute carrier family 40 (iron- 479 L L Q E N V I E S E R G I I N G V Q N S

Query: 1800 tgaactatcttcttgatcttctgcatttcacatcgtgcatcctggctccaaatcctgaag 1859
|||||
Sbjct: 1926 tgaactatcttcttgatcttctgcatttcacatcgtgcatcctggctccaaatcctgaag 1985
solute carrier family 40 (iron- 499 M N Y L L D L L H F I M V I L A P N P E

Query: 1860 cttttggcttgctcgtattgatttcagtctcctttgtggcaatgggccacattatgtatt 1919
|||||
Sbjct: 1986 cttttggcttgctcgtattgatttcagtctcctttgtggcaatgggccacattatgtatt 2045
solute carrier family 40 (iron- 519 A F G L L V L I S V S F V A M G H I M Y

Query: 1920 tccgatttgcccaaaataactctgggaaacaagctctttgcttgcggtcctgatgcaaaag 1979
|||||
Sbjct: 2046 tccgatttgcccaaaataactctgggaaacaagctctttgcttgcggtcctgatgcaaaag 2105
solute carrier family 40 (iron- 539 F R F A Q N T L G N K L F A C G P D A K

Query: 1980 aagtttaggaaggaaaatcaagcaaatacatctgttgtttgagacagtttaactgttgcta 2039
|||||
Sbjct: 2106 aagtttaggaaggaaaatcaagcaaatacatctgttgtttgagacagtttaactgttgcta 2165
solute carrier family 40 (iron- 559 E V R K E N Q A N T S V V ^^^

Query: 2040 tcctgttactagattatatagagcacatgtgcttattttgtactgcagaattccaataaa 2099
|||||
Sbjct: 2166 tcctgttactagattatatagagcacatgtgcttattttgtactgcagaattccaataaa 2225

Query: 2100 tggctgggtgttttgctctgtttttaccacagctgtgccttgagaactaaaagctgttta 2159
|||||
Sbjct: 2226 tggctgggtgttttgctctgtttttaccacagctgtgccttgagaactaaaagctgttta 2285

Query: 2160 ggaaacctaagtcagcagaaaattaactgattaatttccttatgttgaggcatgg 2214
|||||
Sbjct: 2286 ggaaacctaagtcagcagaaaattaactgattaatttccttatgttgaggcatgg 2340
```

CPU time: 0.11 user secs. 0.04 sys. secs 0.15 total secs.

| Lambda | K | H |
|--------|-------|------|
| 1.33 | 0.621 | 1.12 |

| Gapped Lambda | K | H |
|------------------|-------|------|
| 1.33 | 0.621 | 1.12 |

Matrix: blastn matrix:1 -2
Gap Penalties: Existence: 5, Extension: 2
Number of Hits to DB: 6
Number of Sequences: 0
Number of extensions: 6
Number of successful extensions: 2
Number of sequences better than 10.0: 1
Number of HSP's better than 10.0 without gapping: 1
Number of HSP's successfully gapped in prelim test: 0
Number of HSP's that attempted gapping in prelim test: 0
Number of HSP's gapped (non-prelim): 1
length of query: 2222
length of database: 8,425,022,531
effective HSP length: 26
effective length of query: 2196
effective length of database: 8,425,022,505
effective search space: 18501349420980
effective search space used: 18501349420980

Blast Result

Page 5 of 5

T: 0
A: 0
X1: 6 (11.5 bits)
X2: 26 (50.0 bits)
S1: 12 (23.8 bits)
S2: 21 (41.1 bits)